

## CLAIMS

1. A process for manufacturing an electric cable (1), comprising the phases of:
  - 5       – feeding (201) a conductor (2) at a predetermined feeding speed;
  - extruding (202) a thermoplastic insulating layer (4) in a position radially external to the conductor (2);
  - cooling (203) the extruded insulating layer (4);
  - 10       – forming (210) a circumferentially closed metal shield (6) around said extruded insulating layer (4);characterized in that the time occurring between the end of the cooling phase (203) and the beginning of the shield forming phase (210) is inversely proportional to the feeding speed of the conductor (2).
- 15       2. Process according to claim 1, in which the phase of forming (210) comprises the step of longitudinally folding a metal sheet (60) around said extruded insulating layer (4).
3. Process according to claim 2, in which the phase of forming (210)  
20       comprises the step of overlapping the edges of said metal sheet (60) to form the metal shield (6).
4. Process according to claim 2, in which the phase of forming (210) comprises the step of bonding the edges of said metal sheet (60) to form the metal shield (6).
- 25       5. Process according to claim 1, further comprising the phase of supplying the conductor (2) in the form of a metal rod.
6. Process according to claim 1, further comprising the phase of applying a primer layer around the metal shield (6).
7. Process according to claim 6, in which the phase of applying the  
30       primer layer is carried out by extrusion.
8. Process according to claim 1, further comprising the phase of applying an impact protecting element (20) around said

circumferentially closed metal shield (6).

9. Process according to claim 8, in which the phase of applying an impact protecting element (20) comprises the phase of applying a non-expanded polymeric layer (21) around said metal shield (6).
- 5 10. Process according to claim 8, in which the phase of applying an impact protecting element (20) comprises the phase of applying an expanded polymeric layer (22).
11. Process according to claims 9 and 10, in which the expanded polymeric layer (22) is applied around the non-expanded polymeric layer (21).
- 10 12. Process according to claim 1, further comprising the phase of applying an oversheath (23) around the metal shield (6).
13. Process according to claims 10 and 12, in which the oversheath (23) is applied around the expanded polymeric layer (22).
- 15 14. Process according to claim 1, in which the phase of cooling (203) the extruded insulating layer (4) is carried out by longitudinally feeding the conductor (2) with the thermoplastic insulating layer (4) through an elongated cooling device.
- 20 15. Process according to claim 1, in which the thermoplastic polymer material of the insulating layer (4) is selected from: polyolefins, copolymers of different olefins, copolymers of an olefin with an ethylenically unsaturated ester, polyesters, polyacetates, cellulose polymers, polycarbonates, polysulphones, phenol resins, urea resins, polyketones, polyacrylates, polyamides, polyamines, and mixtures thereof.
- 25 16. Process according to claim 15, in which said thermoplastic polymer material is selected from: polyethylene (PE), polypropylene (PP), ethylene/vinyl acetate (EVA), ethylene/methyl acrylate (EMA), ethylene/ethyl acrylate (EEA), ethylene/butyl acrylate (EBA), ethylene/ $\alpha$ -olefin thermoplastic copolymers, polystyrene, acrylonitrile/butadiene/styrene (ABS) resins, polyvinyl chloride (PVC), polyurethane, polyamides, polyethylene
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terephthalate (PET), polybutylene terephthalate (PBT), and copolymers thereof or mechanical mixtures thereof.

17. Process according to claim 1, in which the thermoplastic polymer material of the insulating layer (4) includes a predetermined amount of a dielectric liquid.
18. Electrical cable (1) comprising:
- a conductor (2);
  - a thermoplastic insulating layer (4) radially external to the conductor (2);
  - at least one expanded polymeric layer (8) around said insulating layer (4);
  - a circumferentially closed metal shield (6) around said insulating layer (4), and
  - an impact protecting element (20) in a position radially external to the metal shield (6), said impact protecting element (20) comprising at least one non-expanded polymeric layer (21) around said metal shield (6) and at least one expanded polymeric layer (22) radially external to said non-expanded polymeric layer (21).
19. Electrical cable (1) according to claim 18, wherein the thickness of the expanded polymeric layer (22) is from 1 to 2 times the thickness of the non-expanded polymeric layer (21).